ALMC Topics

- **ORSA MAC I Classes**
- **System of Systems in the classroom**
- **ORSA Toolkit**

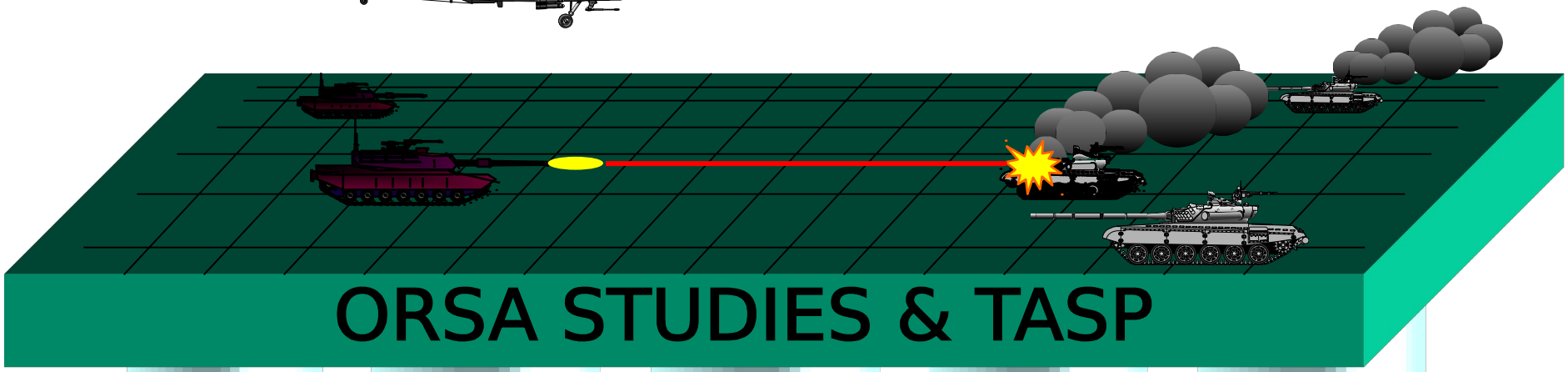
ORSA MAC I Classes

- Four Classes this Calendar Year
- Average class fill is 16 students per class
- Point of interest on non-Army students
  - 8 International Officers
  - 3 Marine Corps Officers
  - 2 Marine Corps Enlisted
  - 1 Air Force Officers
  - 1 Air Force Civilian
  - 1 Navy Civilian

Student Data

	2002	2003	2004	3 yr Δ
OPMD	11	14	20	8
CIV	23	28	20	-3
NG/AGR	3	4	11	8
Allied	9	11	8	-1
Joint	2	6	6	4
Total	48	63	65	17

The MAC I Course



ORSA STUDIES & TASP

Cost Analysis

Simulation Models

Combat Models

Linear Statistical Models

Math Programming Models

Decision Analysis

Inventory

Forecasting

Networks

Probability, Statistics, Calculus, Data Analysis & Modeling

ORSA Studies

An Analytical Community o

Force Structure Analysis | **Weapon Systems Analysis** | **Campaign Analysis**

System of Systems Analysis

Combat Models

Analytical Models
- Lanchester-type attrition
- Aggregation
- Target Acquisition
- Missile Penetration

Combat Theory
- Attrition DiffEqs
- Forward Kolmogorov equations
- Variable attrition rates
- Damage functions

Numerical Models
- Spreadsheet
- Markov Chains
- Engineering
- High Resolution
- Low Resolution

Analytica

Simulation Models

Monte Carlo
- Theory
  - Random Numbers
  - Rand Deviates
- Input Analysis
- DOE
- Output analysis
- Queuing models
- @Risk modeling

@Risk

JFAS

Discrete Event
- Theory
  - Event lists
  - Queues
  - Sim clock
- Input Analysis
- DOE
- Output Analysis
- Arena modeling
- Inventory

Arena

Maple

Mathematical Programming Models

Networks
- Movement

Linear
- Goal programming

Integer
- Manning

Nonlinear

Dynamic

Excel

Linear Statistical Models

Regression
- Least Squares
- Kernel regression
- Local Logistic regression
- Residuals
- Parameter Cov
- Colinearity

DOE & ANOVA
- Factorial, etc.

Applications
- Forecasting
- Readiness Analysis

StatTools

Minitab

Cost & Decision Analysis

Cost Analysis

Decision Analysis

Decision Tools

Military Applications

ORSA ToolBox

A Corporate Approach

Software

- StatTools statistical package for Excel
- Site license is available for StatTools.
  - 100 License – 35% discount - $385/seat, $205 savings
  - 175 License or more – 45% discount - $325/seat
- Decision Making with Insight for Excel – Commercial version $129.00 per seat.
- ArcView – geospatial software.
- Will enable quick turn around analysis.
- ALMC will notify G8 of any significant changes in software.
- ALMC will monitor field activity to ensure training and software are correct match. Report out to ORSA Advisory Committee each year.

Corporate Structure

- Using Blackboard and the AKO login.
- Hosted and Maintained at ALMC.
- Provide an avenue for the entire Army Operations Research Community to stay in touch with one another.
- Provides a Knowledge Management Focus.
- Keep in touch field activities sharing lessons learned through Blackboard.

ORSA Toolkit Course

- Propose new 8 day course for Toolkit
  - Course will cover the three software packages,
  - Use real world scenarios for in class work, and
  - Use Class XXI to Teleconference with analytical agencies during the course.

Proposed 2-Week Course Schedule

- Week 1:
  - Opening address by G8
  - Introduction to Software
  - Begin Working with StatTools
  - Videoconferencing with TRAC, CAA and West Point
  - Conclude the week with Insight software

Proposed 2-Week Course Schedule

- Week 2:
  - Conclude with Insight software introduce ArcView software
  - Wrap-up course with a capstone study analysis and briefing.
- Detailed proposed course schedule attached for your review and comment.

Training Implementation

- First Class in January 05.
- CAA, TRAC and West Point help develop scenarios in fall.
- ALMC create dummy data within appropriate range for each problem.
- CAA, TRAC and West Point review final problem scenarios and data.
- ALMC purchases academic copies of ArcView for the classroom. Faculty training on ArcView.
- Offer the second class in June. Than every January and June.

Fielding Implementation

- Option 1 – G8 purchase all hardware (notebook computers) and software for the 32 Division and Corps billets.
- Option 2 – ALMC purchase all hardware and software (corporate prices) and distribute to students as they come through the course.
  - G8 would provide funds for the purchase
  - ALMC property book would have to transfer to Division or Corps Property book.
  - Hardware and software would be on G8 hand receipt from purchase to disposal. Students would subhand receipt at course. Following tour the hardware/software would return to ALMC for storage.
- Option 3 – CAA would purchase and distribute all hardware/software through ALMC at time of the course. Students would subhand receipt from CAA for the length of their tour. Following tour hardware/software would be returned to CAA for storage.